



QualColor™ Touch

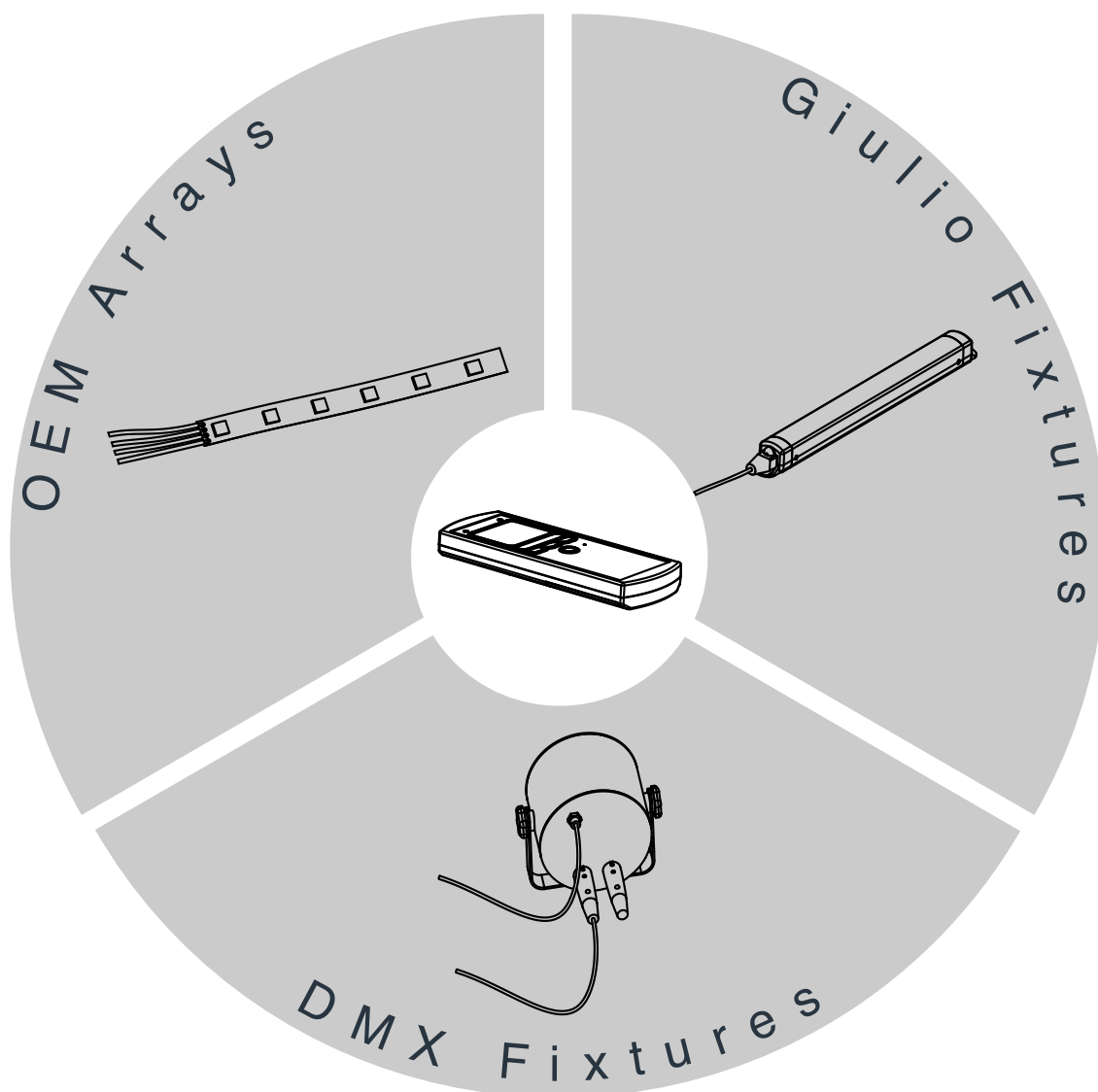
User Manual



Giulio
Lighting

QualColor Touch

Model RC-001

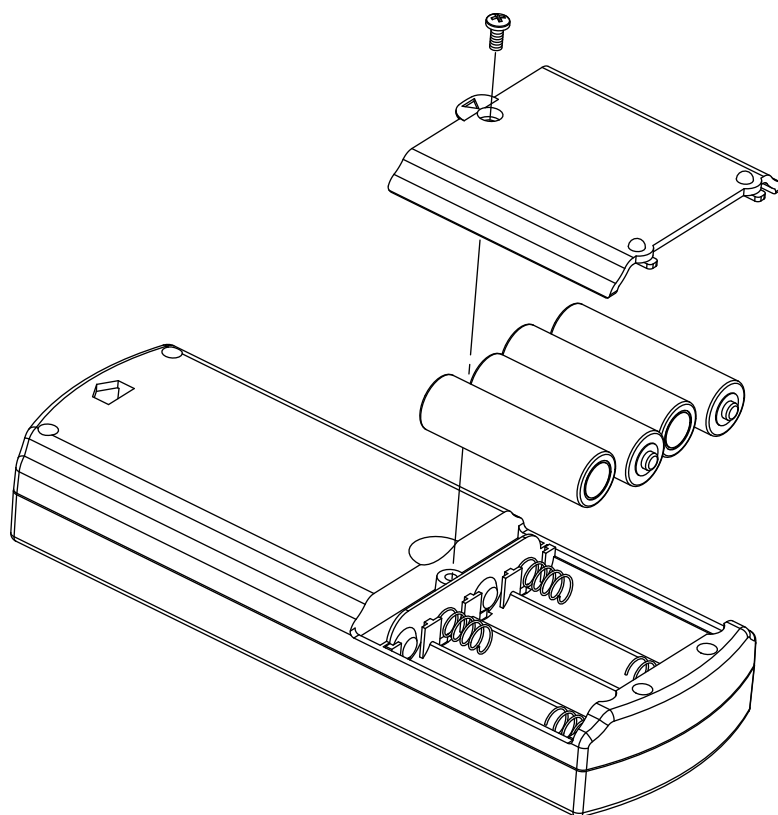


Controlling a world of LED lighting

The Model RC-001 QualColor Touch handheld remote control provides unprecedented control of color-capable lighting systems. Integrating an easy-to-use touch sensitive surface and capable wireless interface, the RC-001 allows full control over a lighting system's color and intensity. The RC-001 can control all Giulio Lighting wireless fixtures and fixture controllers using the LEDlink wireless interface.

Feature	Benefit
Two dimensional color control	Selecting the exact color you want has never been easier. Simply slide your finger up and down to select the hue and left and right to select the saturation level. The lighting fixture follows in real-time.
Separate intensity control	Adjust the fixture brightness without affecting the selected color. Completely off to full-on.
Programmable memory presets	Quickly recall a favorite setting. Found a color that you love? Easily store it for use later. Pleasantly fade from the current setting to the memory preset.
Automatic mode	Command the lighting system to automatically fade between colors for a never ending light show.
LEDlink digital radio interface	Makes installation a breeze. Works without having to point the control at a fixture. Allows one control to simultaneously control multiple fixtures in a completely synchronized fashion.
USB interface	Connect to a Microsoft Windows-based PC or Apple Macintosh to configure advanced features in the remote control or to allow computer control of the lighting system.

Install Batteries



Four AA batteries should be installed as shown above. Note that the battery cover is held in place using a screw. Use Alkaline batteries for best results. A fresh set of batteries should provide years of normal service. An indicator light on the front of the remote blinks when the batteries should be replaced. The remote will not become active when the batteries are too low for correct operation.

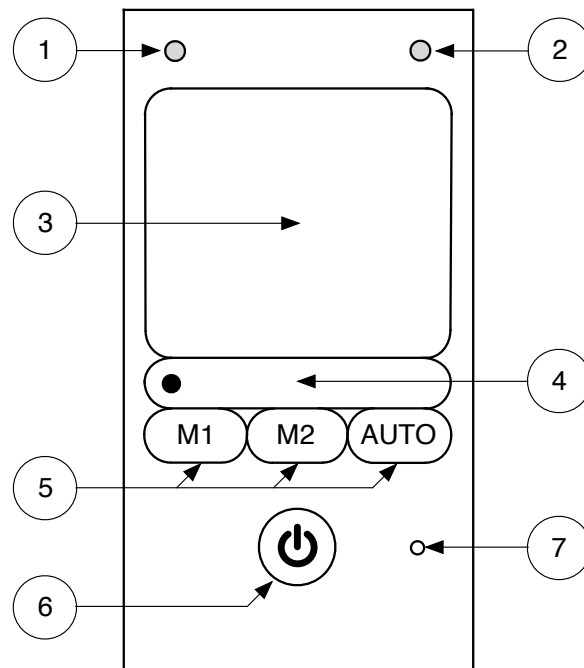
Batteries should be removed if the remote is to be stored for a period in excess of a few months.

Care

Keep the RC-001 out of direct sunlight.

The front surface may be cleaned with a damp cloth. Do not use commercial cleaners.

Control Description



Item	Description
1	Remote Active indicator. This indicator is lit whenever the RC-001 is active and touching the controls will change the lighting.
2	Program/Low Battery indicator. This indicator is lit or flashes to indicate special conditions. 1. Very slow blink (every two seconds) : Low battery condition. The batteries should be replaced. 2. Blinking (every one second) : Link mode. Described further in the chapter “Working with Multiple Devices”. 3. Solid (lit continuously): Computer control. An external computer is operating the remote. 4. One second flash: Memory preset stored.
3	Color touch area. Touching this area with a finger tip selects the hue and saturation of the fixture. Hue is selected along the vertical axis and saturation is selected along the horizontal axis. Fully saturated colors may be selected on the left side of the area. The right side sets the fixture to fully white. Sliding the finger around in this area causes dynamic lighting changes in the fixture(s).

Item	Description
4	Intensity touch area. Touching this area with a finger tip selects the intensity of the fixture. Touch the black dot at the left side to set intensity to zero (off). Touch the right side to set the fixture intensity to 100% (full on). Slide to dynamically change the fixture intensity.
5	Function touch buttons. Touching these areas with a finger tip selects a function associated with the label. 1. M1 : Memory Preset 1. Transmits or stores a color (hue and saturation) and intensity level. Factory default is fixture off. 2. M2 : Memory Preset 2. Transmits or stores a second color (hue and saturation) and intensity level. Factory default is white at full brightness. 3. Auto : Automatic mode. Sets the fixture into an automatically changing mode. Touching and quickly releasing one of the memory presets transmits a command to fade the fixture to the stored values. Touching and holding one of the memory presets until the Program indicator flashes on and then off stores the last combination of color and intensity selected in the Color and Intensity touch areas. Touching and releasing the Auto button transmits a command switching the fixture into one of eight automatic modes. Only one is assigned to the Auto button at a time. A utility program running on a computer can be used to change the assignment. A fixture set into an automatic mode will remain in that mode until the color or intensity is manually changed by touching either the Color or Intensity areas or one of the memory presets. The default automatic mode, assigned at the factory, commands the fixture to fade between randomly selected colors with each change taking between 10 and 60 seconds. All fixtures will fade between the same colors over the same periods (operate identically) when the RC-001 is used to control multiple fixtures at the same time.
6	Remote On/Off. Switch the remote on by pressing this button in order to make the touch sensitive controls active. The remote will automatically switch off after 60 seconds of inactivity. Pressing this button does not affect the operation of the fixture itself.

Item	Description
7	Link Mode. The Link Mode button puts the remote into a special mode described in chapter “Working with Multiple Devices” designed to allow it to be linked with specific fixtures. It is designed to be depressed by the end of an unrolled paper-clip.

Operation

Ensure the fixture to be controlled is correctly installed and powered on.

Activate the RC-001 by pressing the Remote On/Off button. The Remote Active indicator will light. The fixture can now be controlled.

- Touch the Intensity area to change the brightness of the fixture.
- Touch the Color area to change the hue and saturation of the fixture.
- Touch and quickly release one of the memory presets M1 or M2 to cause the fixture to fade to the preset value.
- Touch and hold one of the memory presets until the Program indicator flashes to store the last touched intensity and color.
- Touch and quickly release the Auto button to cause the fixture to dynamically change colors. The fixture will continue to automatically change colors even if the remote is off. It will automatically change colors until the Color or Intensity or one of the memory presets is touched.

The RC-001 must be within range of the fixture. The RC-001 will typically work up to 100 feet (30 m) from the fixture outdoors and 50 feet (15 m) indoors. Actual range may vary substantially based on the position and orientation of the fixture and objects, such as walls, between the RC-001 and the fixture. For best operation be sure to follow the installation instructions that accompany the fixture or fixture controller. Do not hold or cover the top of the RC-001 (the area above the indicators). Attempt to put a minimum of objects between the RC-001 and the fixture.

The LEDlink radio communication between the RC-001 and fixtures is very robust. However some other devices, including microwave ovens, cordless phones and Wifi devices, may cause interference. Often changing the radio channel used by the RC-001 can alleviate the interference. A utility program running on a personal computer is used to change the channel. See the chapter “Computer Utility” for instructions to install the utility program. See the next chapter “Working with Multiple Devices” for instructions on how to reconfigure the fixture to also use the new radio channel after changing it in the RC-001 with the Computer Utility program.

Links

A RC-001 and one or more fixtures or fixture controllers communicate using the proprietary LEDlink radio protocol sharing certain characteristics called a Link. A RC-001 is considered linked to a fixture when it and the fixture share the same Link characteristics. RC-001 remote controls may be linked to fixtures in a variety of ways.

1. One RC-001 to one light fixture or fixture controller. The basic configuration. All devices come from the factory with a default set of Link characteristics allowing the basic configuration to work immediately.
2. One RC-001 to multiple light fixtures. One RC-001 will control more than one fixture or fixture controller identically if all share the same Link characteristics (the factory default set for example).
3. More than one RC-001 devices controlling a single fixture or fixture controller. Multiple RC-001 remote controls can control a single fixture (or even a group of fixtures) if they all share the same Link characteristics.
4. Multiple RC-001 devices controlling multiple fixtures independently. Particular RC-001 remote controls and light fixtures or light fixture controllers can be linked to operate independently of other devices by assigning different Link characteristics to them. For example, a set of under cabinet fixtures may be controlled by one RC-001, while a set of cove fixtures may be controlled by another RC-001 without interference between the two pairs of devices.

The RC-001 has built-in capability to support up to three independent pairs of RC-001 and fixtures operating in close proximity. More sophisticated configurations or changing certain Link characteristics require the use of a utility program running on a personal computer connected to the RC-001 over a USB interface. Use of the utility program is described in the next chapter, “Computer Utility”.

This chapter describes how to Link RC-001 remote controls to fixtures and fixture controllers.

Link Overview

Links managed by the RC-001 remote control include the following attributes. These attributes define the Link characteristics.

1. Radio channel : Specifies the common frequency the radio transmitter in the RC-001 and radio receiver in the fixture are tuned to.
2. Network ID : The Network ID is designed to allow multiple, overlapping pairs of RC-001 / fixtures to work without interference. A common use is to prevent a RC-001 in one apartment or home from affecting a light fixture in another apartment or home.
3. Device address : Each fixture or fixture controller may be configured with a unique device address. The RC-001 is configured with the device address for the fixture it controls.

The factory default configuration for the RC-001 and all LEDlink capable Giulio Lighting fixtures or fixture controllers contains the same linking attributes allowing a RC-001 remote control to immediately work with these fixtures.

Certain conditions may require that one of the Link attributes be changed. Example conditions include the following.

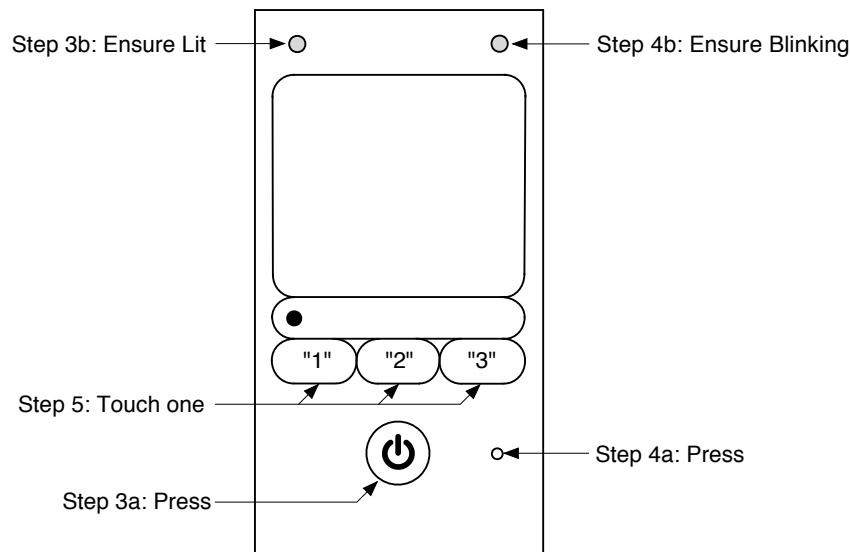
1. The user desires to have multiple RC-001 remote controls, each controlling a separate fixture.
2. The user desires to change the Radio channel to avoid radio interference from a microwave oven.
3. The user desires to change the Network ID to avoid interference from a lighting system in another apartment or home.

The RC-001 contains a built-in mechanism for quickly changing the link to support up to 3 separately addressed fixtures without the use of a computer. This allows up to three separate RC-001 remote controls to operate in the same environment independently controlling up to three fixtures or sets of fixtures. This mechanism does not require the use of the utility program and is described in this section.

For other changes, a utility program, described in chapter “Computer Utility”, is run on a personal computer connected to the RC-001. The program allows the user to change the desired Link attribute in the RC-001. Then the RC-001 is disconnected from the computer and used to transfer the attributes to selected fixtures and fixture controllers by the linking process described in this section. The linking process configures both the RC-001 and any fixture or fixture controllers that it is linked to with the same Radio channel, Network ID and Device address.

Linking Process

On Remote Device
Step 1: Make sure device is powered on.
Step 2: Press Prog Button (Prog indicator lights).



The linking process is illustrated by the following diagram and steps. You will need an unrolled paperclip to press certain buttons during the process.

Step	Description
1	Make sure that all fixtures or fixture controllers to be linked with the RC-001 are powered on and in close proximity to the RC-001 (within approximately 5 feet / 2 m).
2	Press the Prog button on each fixture or fixture controller using the paperclip. The red Prog indicator next to the button will light. The fixture or fixture controller is ready to be linked. Multiple fixtures or fixture controller may be linked at the same time.
3	Press the On/Off button on the RC-001 and observe that the Remote Active indicator is lit.
4	Press the Link Mode button on the RC-001 using the paperclip. The red Program indicator will begin to flash on and off every second. The RC-001 is now ready to establish a link. It will remain ready for 30 seconds. After 30 seconds the Program indicator will stop flashing and the Link Mode button must be depressed again to re-enable the linking process.

Step	Description
5	Touch one of the Function buttons to establish the specific link between the RC-001 and any fixture or fixture controller that has been enabled to be linked in step 2. The M1 button establishes a link with Device address 1, the M2 button establishes a link with Device address 2 and the Auto button establishes a link with Device address 3. Note: The factory default for all Giulio Lighting devices is Device address 1.
6	Observe that the Prog indicators on the fixture or fixture controllers enabled in step 2 turns off. This indicates the link was successfully established. If the Prog indicator does not turn off then the link was not successfully established (the distance between RC-001 and the fixture may have been too great, there was some radio interference during the linking or the 30 second link period in RC-001 expired). Attempt the linking again by touching the same Function touch button as done before in step 5 (ensure the Program indicator on the RC-001 is flashing).
7	Test the link once the fixture or fixture controllers have successfully received the link information (their Prog indicators turn off). Either wait for the Program indicator on the RC-001 to stop flashing or press the Link Mode button on the RC-001 before the 30 second period expires to restore normal operation. Changing the intensity and color on the RC-001 should result in operation of all properly linked fixtures or fixture controllers.

Linking the RC-001 with additional fixtures

Each RC-001 can control more than one fixture or fixture controller. As configured at the factory, all Giulio LEDlink capable devices share the same Link characteristics. If the Link attributes of the RC-001 have not been changed then additional fixtures or fixture controllers will work immediately with no other actions required.

If a Link attribute has been changed or the new fixture is to work with a second or third RC-001 (as described in the following pages) then the new fixture must be linked with the RC-001 as described in the previous section. Be sure to use the same Device address as was used for any previous linkings. For example, Device address 1 for factory default fixtures. Device address 2 is used for second RC-001 / fixture combinations and Device address 3 is used for third RC-001 / fixture combinations.

Configuring a second or third RC-001/fixture combination

A second or third RC-001 / fixture combination that works independently of other combinations may be linked following the procedure described in the preceding section. Select Device Address 2 (Button “M2”) in step 5 for the second combination. Select Device Address 3 (Button “Auto”) in step 5 for the third combination.

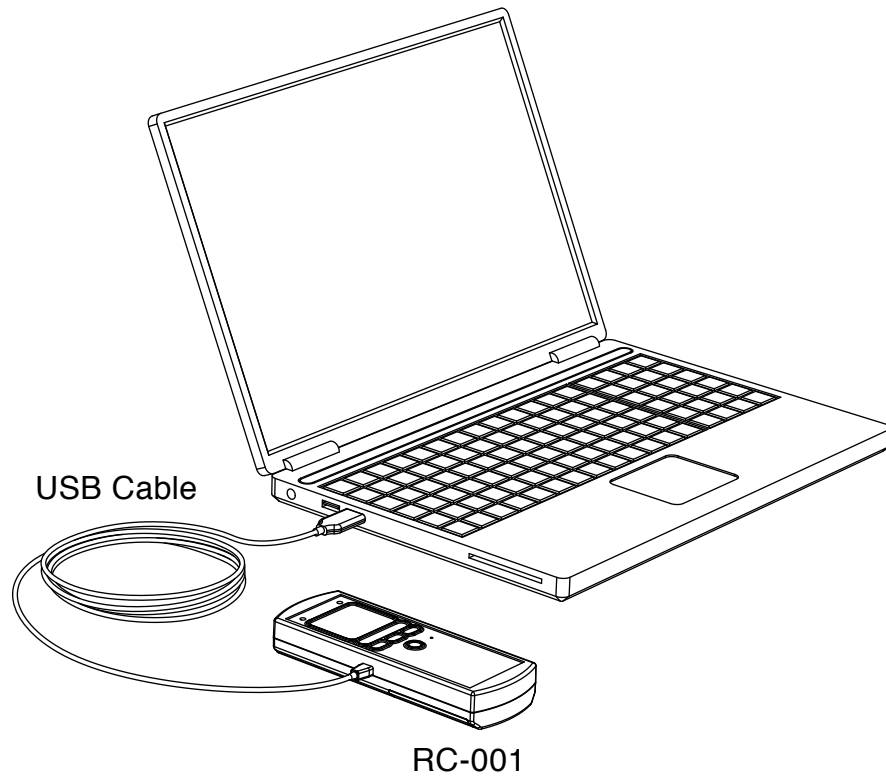
Advanced Linking

The utility program described in the next chapter is used for changing the following Link attributes.

1. Supporting more than three addresses. For example if a fourth RC-001 / fixture combination is desired.
2. Adjusting the Radio channel. For example to eliminate interference from a Wifi network.
3. Changing the Network ID. For example to eliminate interference from a RC-001 in another apartment or home.

The procedure for changing one of these Link attributes involves the following steps.

Step	Description
1	Install the utility program on a personal computer if it is not already installed.
2	Connect the RC-001 to the personal computer using the supplied USB cable. Start the utility program.
3	Use the utility program to change the desired Link attribute and store the new attribute in the RC-001.
4	Shut down the program and then disconnect the RC-001 from the personal computer. Bring it within close proximity to any fixtures or fixture controllers that it should be linked with.
5	Use the linking process described earlier in this chapter to (re)link the RC-001 with the fixture or fixtures.



The Color Touch Commander utility program may be downloaded from the www.giuliolighting.com website to provide the following additional capabilities.

1. Customize the linking attributes.
2. Customize the Function buttons.
3. Computer control of the fixtures.
4. Fixture configuration.

System Requirements

Microsoft Windows PC

- Windows XP with Service Pack 2, Windows Vista, Windows 7
- 25 MB spare disk space
- Spare USB Port

Apple Macintosh

- Mac OS X 10.5 or later running on an Intel Processor
- 25 MB spare disk space
- Spare USB Port

Installing Software

Please check the downloads section of the www.giuliolighting.com website for the most current version of Color Touch Commander and to check compatibility with operating systems not listed in the System Requirements.

Microsoft Windows PC

Download the zip file containing the Microsoft Windows PC version of the program to a known location. Windows will give you the option of downloading it or opening it. You will need to unzip the file if you download it before you can install the application. A folder will open containing the QualColorTouch.exe installer program once the file has been downloaded and unzipped.

Double-click the installer program to start the installation process. Follow the instructions provided by the installer program to complete the installation.

Apple Macintosh

Download the dmg file containing the Apple Macintosh version of the program to a known location such as the downloads folder. Open the dmg file by double-clicking on its icon or selecting it from a stack (from the downloads folder icon on the dock for example).

Drag the Color Touch Command icon into the Applications folder. The application is installed.

Operation

To operate the software follow the instructions in the QualColor Touch Commander program Installation Guide and User Manual that may be downloaded from the website.

Note: Do not connect the RC-001 to the computer until the software has been successfully installed. Connecting the RC-001 to the computer before the software has been installed may cause the operating system to prompt for an installation disk. Click the Cancel button if this happens. All necessary software will be installed along with the program.

Functions	Color Selection	Hue and Saturation
	Intensity Selection	0 - 100%
	Memory Settings	2 non-volatile Hue / Saturation / Intensity presets
		1 non-volatile Auto mode preset
	Automatic Functions	Pseudo-random color selection with four selections for rate of change.
		Sequential color selection with four selections for rate of change.
	Computer Interface	USB 2.0 Full speed compatible.
Computer configuration of RC-001.		
Computer control of lighting system.		
Touch Surface	Sensor Type	Capacitive
	Hue Range	1026 counts
	Saturation Range	256 counts
	Intensity Range	256 counts
Radio	Type	Giulio Lighting LEDlink proprietary digital bi-directional protocol.
		Interoperates with all Giulio Lighting LEDlink capable fixtures and fixture controllers.
	Modulation Type	GFSK
	Frequency Range	2.4 GHz Instrument, Scientific and Medical band (ISM)
		2.402 GHz - 2.480 GHz
	Power Output	0 dBm max at antenna input
Power	Battery	6 volt (4 x AA), 30 mA max
	USB	5 volt, 55 mA max

Dimensions	Width	6.5 cm / 2.559"
	Length	18.15 cm / 7.146"
Dimensions	Height	2.639 cm / 1.039"
	Weight	225 gm / 7.94 Oz with 4 Alkaline AA batteries
Environmental	Operating	0 - 50° C / 32 - 122° F 20 - 90% relative humidity, non-condensing
	Storage	-20 - 60° C / -4 - 140° F 10 - 95% relative humidity, non-condensing
Regulatory	FCC	FCC Class B Contains FCC ID: XO6-DJ2MOD1 IC: 8558A-DJ2MOD1

Manufacturer warrants this product to be free from defects in material and workmanship under normal use and conditions ("manufacturing defect") for a period of one (1) year from date of original purchase (the invoice date). This warranty extends to the original buyer (Purchaser) or end-user customer of Manufacturer authorized reseller, and does not apply to fuses, batteries, equipment attached to product or any product, which, in Manufacturer's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Manufacturer will, at its option, repair or replace the Product, or reimburse Purchaser or end user for the full purchase price.

To obtain service, obtain a return authorization (RMA) from the Manufacturer website and then follow the instructions for return of the unit you receive with the RMA.

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Since some countries and states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this warranty is held invalid or unenforceable by a court of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision of this warranty.

INFORMATION TO USER

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



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Contact
www.giuliolighting.com
support@giuliolighting.com

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